

Appl. No. 10/033,346
Amdt. Date Aug. , 2003
Reply to Office Action of May 6, 2003

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A dense wavelength division multiplexer module comprising:

a plurality of dense wavelength division multiplexers, ~~each of the dense wavelength division multiplexers comprising a sleeve;~~

a plurality of optical fibers communicating between the dense wavelength division multiplexers;

a plurality of heat shrinkage pipes and a plurality of holders, each of the heat shrinkage pipes retaining optical fibers therein, each of the holders holding at least one heat shrinkage pipe therein;

~~a plurality of retainers, each of the retainers retaining the sleeve of a corresponding dense wavelength division multiplexer therein; and~~

supporting means comprising an array of ribs, the array of ribs comprising at least three pairs of ribs, a plurality of channels being thereby interleavingly defined between the pairs of the ribs;

wherein each of the dense wavelength division multiplexers~~retainers~~ is secured in a corresponding channel between two corresponding pairs of the ribs.

Claim 2 (original): The dense wavelength division multiplexer module

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in accordance with claim 1, wherein the ribs in each pair of the ribs are generally aligned with each other, each pair of the ribs is generally parallel to an adjacent pair of the ribs, and the pairs of the ribs are evenly spaced apart.

Claim 3 (currently amended): The dense wavelength division multiplexer module in accordance with claim 21, further comprising a plurality of retainers; wherein each of the dense wavelength division multiplexers comprises a sleeve, each of the retainers retains the sleeve of a corresponding dense wavelength division multiplexer therein, and the retainers are secured in the array of ribs. ~~wherein each of the retainers comprises two opposite sidewalls, and two steps are formed in the retainer at opposite ends of each of the sidewalls respectively, and each of the ribs comprises a generally straight inmost end and an arcuate outmost end, a distance between the inmost ends in each pair of the ribs is substantially equal to a distance between opposite ends of each of the sidewalls of each of the retainers between two corresponding steps, a width of each of the channels between adjacent inmost ends is substantially equal to a distance between outmost faces of two directly opposite steps at respective opposite sidewalls of each of the retainers.~~

Claim 4 (currently amended): A dense wavelength division multiplexer module comprising:

a plurality of dense wavelength division multiplexers, each of the dense wavelength division multiplexers comprising a sleeve;

a plurality of optical fibers communicating between the dense

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wavelength division multiplexers; and

a plurality of retainers, each of the retainers retaining the sleeve of a corresponding dense wavelength division multiplexer therein; and

supporting means comprising a base and a cover, the base comprising a motherboard and a peripheral frame upwardly formed at edges of the motherboard, an array of ribs being upwardly and integrally formed from a bottom of the motherboard, the array comprising at least three pairs of ribs, a plurality of channels being defined between the pairs of ribs;

wherein the retainers the dense wavelength division multiplexers are secured in the channels of the array of ribs, being free of epoxy, and the cover is sealedly secured on the base, thereby forming an inner space for receiving the retainers with the plurality of dense wavelength division multiplexers therein.

Claim 5 (currently amended): The dense wavelength division multiplexer module in accordance with claim 4, ~~further comprising a plurality of retainers; wherein~~ each of the retainers comprises two opposite sidewalls, and two steps are formed on each of the sidewalls at opposite ends thereof, and each of the ribs comprises a generally straight inmost end and an arcuate outmost end, a distance between the inmost ends in each pair of the ribs is substantially equal to a distance between opposite ends of each of the sidewalls of each of the retainers between two corresponding steps, a width of each of the channels between adjacent inmost ends is substantially equal to a distance between outmost faces of two directly opposite steps at respective opposite sidewalls of each of the retainers~~each of the dense wavelength division multiplexers comprises a sleeve, each of~~

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~~the retainers retains the sleeve of a corresponding dense wavelength division multiplexer therein, and the retainers are secured in the array of ribs.~~

Claim 6 (original) The dense wavelength division multiplexer module in accordance with claim 4, further comprising a plurality of heat shrinkage pipes and a plurality of holders, each of the heat shrinkage pipes retaining optical fibers therein, each of the holders holding at least one heat shrinkage pipe therein.

Claim 7 (currently amended): The dense wavelength division multiplexer module in accordance with claim ~~[[5]]~~ 4, wherein each of the retainers defines a passage, a diameter of said passage is substantially equal to a diameter of the sleeve of each of the dense wavelength division multiplexers, and each of the dense wavelength division multiplexers is retained in said passage of a corresponding retainer.

Claim 8 (currently amended): The dense wavelength division multiplexer module in accordance with claim ~~[[5]]~~ 7, wherein each of the retainers forms a C-shaped bead in said passage, each of the sleeves of the dense wavelength division multiplexers defines a circumferential groove, and the groove engagingly receives the C-shaped bead of a corresponding retainer.

Claim 9 (original): The dense wavelength division multiplexer module in accordance with claim 7, wherein each of the retainers defines an

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entrance in a top surface thereof, and said entrance communicates with said passage of the retainer.

Claim 10 (cancelled)

Claim 11 (original): The dense wavelength division multiplexer module in accordance with claim 6, wherein each of the holders defines a plurality of passages parallel to each other, a diameter of each of said passages is substantially equal to a diameter of each of the heat shrinkage pipes; and each of the heat shrinkage pipes is retained in a corresponding said passage of a corresponding holder.

Claim 12 (original): The dense wavelength division multiplexer module in accordance with claim 11, wherein each of the holders defines a plurality of parallel entrances therein, and each of said entrances is in communication with a corresponding said passage of the holder.

Claim 13 (cancelled)

Claim 14 (currently amended): The dense wavelength division multiplexer module in accordance with claim [[13]] 4, further comprising a rubber loop secured between the cover and the base.

Claim 15 (currently amended): The dense wavelength division multiplexer module in accordance with claim 14, wherein the base comprises a motherboard and a peripheral frame upwardly formed at four

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~~edges of the motherboard, the array of ribs is upwardly formed from the motherboard,~~ the frame defines a peripheral recess therein, and the rubber loop is secured in the recess and is pressed by the cover to provide a tight seal between the cover and the base.

Claim 16 (original): The dense wavelength division multiplexer module in accordance with claim 15, wherein a sidewall of the frame defines a cutout, and at least one of the optical fibers is extended through the cutout.

Claim 17 (original): The dense wavelength division multiplexer module in accordance with claim 16, further comprising a protecting component retained in the cutout of the frame of the base, the protecting component comprising an elongate holding frame and a plurality of strain relief boots, the holding frame defining a plurality of through holes therein, and wherein each of the strain relief boots has a corresponding optical fiber extending therethrough, and is secured in a corresponding through hole.

Claim 18 (currently amended): The dense wavelength division multiplexer module in accordance with claim ~~[[15]]~~ 6, wherein the motherboard of the base forms a plurality of projections disposed close to corresponding sidewalls of the frame, each of the projections comprises a main portion and two end portions perpendicularly extending from opposite ends of the main portion toward a proximate one of the corresponding sidewalls of the frame, and each of the holders is secured in a space defined between the end portions and the main portion of a corresponding

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projection, and the proximate sidewall of the frame.

Claim 19 (currently amended): The dense wavelength division multiplexer module in accordance with claim 104, wherein ~~the array of ribs comprises at least three pairs of ribs, the ribs in each pair of the ribs are generally aligned with each other, each pair of the ribs is generally parallel to an adjacent pair of the ribs, the pairs of the ribs are evenly spaced apart, and a the plurality of channels is thereby interleavingly defined between the pairs of the ribs, and each of the retainers is securely retained in a corresponding channel between two corresponding pairs of the ribs.~~

Claim 20 (cancelled)

Claim 21 (currently amended): A dense wavelength division multiplexer module comprising:

- a plurality of dense wavelength division multiplexers, each of said dense wavelength division multiplexers comprising a sleeve;

- a plurality of optical fibers communicating between the dense wavelength division multiplexers;

- a plurality of retainers holding said sleeves of said dense wavelength division multiplexers in position in an interior area of the module;

- a plurality of holders retaining a plurality of shrinkage pipes in a periphery of said module; wherein

- each of said shrinkage pipes seals a region where two of said optical fibers are spliced together.

Claim 22 (new): The dense wavelength division multiplexer module in

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accordance with claim 21, wherein pairs of ribs are integrally and upwardly formed from a bottom wall of the interior area of the module, and the retainers are secured in channels interleaved between each pair of ribs.